

PROCESS FOR DEPOSITING F-DOPED SILICA GLASS IN HIGH  
ASPECT RATIO STRUCTURES

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ABSTRACT OF THE DISCLOSURE

10       A process for filling high aspect ratio gaps on  
substrates uses conventional high density plasma  
deposition processes to deposit fluorine-doped films,  
with an efficient sputtering inert gas, such as Ar,  
replaced or reduced with an inefficient sputtering  
15   inert gas such as He and/or hydrogen. By reducing the  
sputtering component, sidewall deposition from the  
sputtered material is reduced. Consequently, gaps with  
aspect ratios greater than 3.0:1 and spacings between  
lines less than 0.13 microns can be filled with low  
20   dielectric constant films without the formation of  
voids and without damaging circuit elements.